






Parts Required To Build an Electric Vacuum Press System

1. Vacuum Pump
2. Main Kit Components
3. Misc. Hardware Store Items (EVS kits only)
4. Vacuum Bag

- Electric Vacuum Press Kits & Systems -					
	Project: EVS™ Auto-Cycling Kit + 1.1 CFM Vacuum Pump	Project: EVS™ Auto-Cycling Kit + 3 CFM Vacuum Pump	Project: EVS™ Auto-Cycling Kit + 5 CFM Vacuum Pump	Excel 1™ Continuous Run System With 1.1 CFM Vacuum Pump	Excel 5™ Continuous Run System With 5 CFM Vacuum Pump
Type	Auto-Cycling	Auto-Cycling	Auto-Cycling	Continuous-Run	Continuous-Run
Max Bag Size Flat work: Curved work:	4qx 4q 2qx 4q	4qx 9q 4qx 4q	4qx 15qor 6qx 10q 4qx 6q	4qx 4q 2qx 4q	4qx 15qor 6qx 10q 4qx 6q
Vacuum CFM	1.1 CFM	3.15 CFM	5 CFM	1.1 CFM	5 CFM
Max Vacuum	25.5+Hg	25.5+Hg	25.5+Hg	25.5+Hg	25.5+Hg
Max Force	1,750 lbs per square ft.	1,750 lbs per square ft.	1,750 lbs per square ft.	1,750 lbs per square ft.	1,750 lbs per square ft.
Adjustable Vacuum	Yes (via Vacuum Controller)	Yes (via Vacuum Controller)	Yes (via Vacuum Controller)	Yes (via Bleeder Valve)	Yes (via Bleeder Valve)
Noise*	45 dB	74 dB	63 dB	45 dB	63 dB
Evacuation Time** (4x4 Bag to 21" Hg)	319 seconds	129 seconds	84 seconds	174 seconds	46 seconds
Build Time (approx)	4 to 6 hours	4 to 6 hours	4 to 6 hours	20 to 30 minutes	20 to 25 minutes
Additional items not included with the kit	Misc. hardware store items & vacuum pump	Misc. hardware store items & vacuum pump	Misc. hardware store items & vacuum pump	None	None
Kit Sale Price	\$171.90	\$171.90	\$171.90	\$286.50	\$399.90
Pump Price	\$219.00	\$99.00	\$329.00	(included in kit)	(included in kit)
Total Cost to Build*	\$465.00	\$345.00	\$575.90	\$286.50	\$399.90
Vacuum Clamping	Yes, w/ optional kit	Yes, w/ optional kit	Yes, w/ optional kit	Yes, w/ optional kit	Yes, w/ optional kit
Vacuum Forming	Yes	Yes	Yes	Yes	Yes
Instructions	Website & PDF	Website & PDF	Website & PDF	PDF	PDF
Advantages	Very quiet, fully adjustable, and highly adaptable to other uses such as vacuum clamping.	Fast vacuum draw, fully adjustable, and highly adaptable to other uses such as vacuum clamping.	Very fast vacuum draw, fully adjustable, and highly adaptable to other uses such as vacuum clamping.	Fully adjustable and very quiet. Makes vacuum clamping a breeze and is very easy to assemble.	Fully adjustable, can handle very large vacuum projects, and makes vacuum clamping as easy as can be.
Disadvantages	A bit heavy and takes a little more time to build than a comparable Excel kit.	A bit heavy and takes a little more time to build than a comparable Excel kit.	A bit heavy and takes a little more time to build than a comparable Excel kit.	Limited to a vacuum bag no larger than 4qx 4qbut for many users, this system is perfect.	A bit louder than the Excel 1 kit but certainly nothing that will wake the neighbors.
Comments	From a price and speed standpoint, it makes more sense to go with the rebuilt Thomas pump instead.	With the rebuilt Thomas vacuum pump, this system is affordable, reliable, and easy to build.	Perfect for the user who needs portability or wants a power- house of a vacuum press system.	Need a system quickly? This is it. Get the vacuum clamping add- on. It's worth every penny.	Surprisingly quiet for such a powerful system. The vacuum clamping add-on is worth every penny.
Image					






* Estimated

** Estimated for flat panels

Parts Required To Build an Air-Powered Vacuum Press

1. Air Compressor
2. Main Kit Components
3. Misc. Hardware Store Items
4. Vacuum Bag

- Air Powered Vacuum Press Kits -

	Project: V2™ Mini Auto-Cycling Venturi System	Project: V2™ Basic Auto-Cycling Venturi System	Project: V2™ Plus Auto-Cycling Venturi System	Project: V2™ Premium 5 Auto-Cycling Venturi System	Project: V2™ Premium 9 Auto-Cycling Venturi System
Type	Auto-Cycling	Auto-Cycling	Auto-Cycling	Auto-Cycling	Auto-Cycling
Max Bag Size Flat work: Curved work:	2qx 4q 2qx 2q	4qx 4q 2qx 4q	4qx 9q 4qx 4q	4qx 15qor 6qx 10q 4qx 6q	6qx 15q 4qx 9q
Vacuum CFM	.5 CFM	1.2 CFM	3.2 CFM	5.5 CFM	9 CFM
Max Pressure	27.5+Hg	27.5+Hg	27.5+Hg	27.5+Hg	27.5+Hg
Max Force	1925 lbs per square foot	1925 lbs per square foot	1925 lbs per square foot	1925 lbs per square foot	1925 lbs per square foot
Adjustable Vacuum	Yes (via Vacuum Controller)	Yes (via Vacuum Controller)	Yes (via Vacuum Controller)	Yes (via Vacuum Controller)	Yes (via Vacuum Controller)
Air Compressor Output Requirement	.8 CFM @ 80 PSI 1.2 CFM @ 90 PSI	1.8 CFM @ 80 PSI 2.2 CFM @ 90 PSI	4.8 CFM @ 80 PSI 5.5 CFM @ 90 PSI	7.8 CFM @ 80 PSI 9 CFM @ 90 PSI	12.5 CFM @ 80 PSI 14 CFM @ 90 PSI
Noise*	68 dB	68 dB	68 dB	68 dB	68 dB
Evacuation Time** (4x4 Bag to 21" Hg)	262 seconds	118 seconds	66 seconds	38 seconds	25 seconds
Build Time (approx)	2 to 3 hours	2 to 3 hours	2 to 3 hours	2 to 3 hours	2 to 3 hours
Additional items not included with the kit	Misc. items from the hardware store	Misc. items from the hardware store	Misc. items from the hardware store	Misc. items from the hardware store	Misc. items from the hardware store
Kit Sale Price	\$177.50	\$177.50	\$187.50	\$258.00	\$286.00
Total Cost to Build*	\$207.50	\$207.50	\$217.50	\$288.00	\$316.00
Vacuum Clamping	Yes, w/ optional kit (\$110.50)	Yes, w/ optional kit (\$110.50)	Yes, w/ optional kit (\$110.50)	Yes, w/ optional kit (\$110.50)	Yes, w/ optional kit (\$110.50)
Vacuum Forming	Yes	Yes	Yes	Yes	Yes
Instructions	Website & PDF	Website & PDF	Website & PDF	PDF	PDF
Advantages	Great for very small compressors, very easy to build and ultra-reliable.	Great for small compressors, very easy to build and of course it's ultra-reliable.	Very reliable and easy to build. Great vacuum speed at a super low cost.	Not only is it easy to build, it's also reliable and quite speedy. You'd be surprised!	A system like this can handle almost any veneering project that you can imagine.
Disadvantages	It's not as fast as some users prefer and has a lower performance-to-cost ratio.	Faster than the Mini version but not as fast as the other kits offered here.	Requires a small to medium size compressor but it's very efficient with the air.	Requires a decent size air compressor and uses 7.8 CFM of air to create vacuum.	Requires a large air compressor and uses 12.5 CFM of air to create vacuum.
Comments	This system is best suited for smaller projects but if you own a small air compressor, it's not a bad deal.	If your compressor will allow it, spend an extra 10 bucks to get the Plus+ model. It's a very worthwhile upgrade.	This is the kit that gives you the most bang for your buck. This is one of my favorite vacuum presses.	The upgraded parts cause a jump in price but overall, this is a very cost effective vacuum press system.	This is an industrial grade vacuum press system at a fraction of the price. Build it and save!
Image					

* Estimated

** Estimated for flat panels

- Vacuum Pressing Bags -

Nominal Size (Width x Length)	Actual Size (Width x Length)	Included Bag Closure	Min. Vacuum Source *	Material Name	Material Type	Seam Method **	Lubricant Infusion ***	VeneerSupplies.com Price
2' x 2'	27+x 27+	29+	1 CFM	VS Standardi	30 Mil Vinyl	RF Welded	No	\$47.50
2' x 2'	27+x 27+	29+	1 CFM	VS Extremei	30 Mil Polyurethane	RF Welded	Yes	\$68.50
2' x 4'	27+x 54+	29+	1 CFM	VS Standardi	30 Mil Vinyl	RF Welded	No	\$72.50
2' x 4'	27+x 54+	29+	1 CFM	VS Elitei	20 Mil Polyurethane	RF Welded	Yes	\$102.00
2' x 4'	27+x 54+	29+	1 CFM	VS Extremei	30 Mil Polyurethane	RF Welded	Yes	\$137.50
2' x 6'	27+x 78+	29+	1 CFM	VS Standard i	30 Mil Vinyl	RF Welded	No	\$94.00
2' x 6'	27+x 78+	29+	1 CFM	VS Extremei	30 Mil Polyurethane	RF Welded	Yes	\$174.50
2' x 9'	27+x 114+	29+	1 CFM	VS Elitei	20 Mil Polyurethane	RF Welded	Yes	\$149.50
2' x 9'	27+x 114+	29+	1 CFM	VS Extremei	30 Mil Polyurethane	RF Welded	Yes	\$195.00
2' x 12'	27+x 150+	29+	3 CFM	VS Elitei	20 Mil Polyurethane	RF Welded	Yes	\$173.50
2' x 21'	27+x 258+	29+	5 CFM	VS Elitei	20 Mil Polyurethane	RF Welded	Yes	\$249.50
4' x 4'	54+x 54+	58+	1 CFM	VS Standard i	30 Mil Vinyl	RF Welded	No	\$115.50
4' x 4'	54+x 54+	58+	1 CFM	VS Elitei	20 Mil Polyurethane	Seamless	Yes	\$179.00
4' x 4'	54+x 54+	58+	1 CFM	VS Extremei	30 Mil Polyurethane	Seamless	Yes	\$220.00
4' x 6'	54+x 78+	58+	3 CFM	VS Standard i	30 Mil Vinyl	RF Welded	No	\$149.50
4' x 6'	54+x 78+	58+	3 CFM	VS Elitei	20 Mil Polyurethane	Seamless	Yes	\$204.00
4' x 6'	54+x 78+	58+	3 CFM	VS Extremei	30 Mil Polyurethane	Seamless	Yes	\$255.00
4' x 8'	54+x 100+	58+	3 CFM	VS Standard i	30 Mil Vinyl	RF Welded	No	\$179.50
4' x 9'	54+x 114+	58+	3 CFM	VS Elitei	20 Mil Polyurethane	Seamless	Yes	\$248.00
4' x 9'	54+x 114+	58+	3 CFM	VS Extremei	30 Mil Polyurethane	Seamless	Yes	\$339.00
4' x 12'	54+x 150+	58+	5 CFM	VS Elitei	20 Mil Polyurethane	Seamless	Yes	\$323.00
4' x 12'	54+x 150+	58+	5 CFM	VS Extremei	30 Mil Polyurethane	Seamless	Yes	\$389.00
4' x 15'	54+x 186+	58+	5 CFM	VS Elitei	20 Mil Polyurethane	Seamless	Yes	\$395.00
6' x 6'	78+x 78+	82+	3 CFM	VS Extremei	30 Mil Polyurethane	RF Welded	Yes	\$349.00
6' x 9'	78+x 114+	82+	5 CFM	VS Extremei	30 Mil Polyurethane	RF Welded	Yes	\$550.00
6' x 15'	78+x 186+	82+	5 CFM	VS Extremei	30 Mil Polyurethane	RF Welded	Yes	\$795.00

* The required vacuum flow for flat panel work.

** This refers to the edge seams. All VS Standardi vacuum bags have an RF welded end seam.

*** VS Elitei and VS Extremei vacuum bags are infused with a non-transferring lubricant that prevents most veneering adhesives from sticking to the bag.

Please Note

- All VeneerSupplies.com vacuum bags are assembled in the USA.
- To connect your vacuum tube to the vacuum bag, a [Lock-On Connector](#) (available at VeneerSupplies.com) is required.
- Each vacuum bag includes one [bag closure](#).
- Our vacuum bags include the new flush-mount bag stem assembly that allows you to use the full length of the vacuum bag without worry of project surface damage. A specially designed 2.5" diameter 50 mil flange is molded onto the bag stem body and is permanently welded onto each bag. The bag stem is mounted in the center (left to right) and approximately 15" in from the bag opening.



Don't Forget Breather Mesh

Breather mesh is a unique plastic fabric that is used in the vacuum bag to allow air to flow across the project being pressed and towards the vacuum port or bag stem. It is used in place of a top platen. Without it, the vacuum bag material will seal itself against the veneer causing pockets of air to form. These pockets have little or no vacuum pressure inside and therefore do not provide the even clamping strength required to keep the veneer flat during the vacuum pressing process. Use [breather mesh](#) to distribute vacuum pressure evenly throughout the bag. This is the key to successful vacuum pressing!

Learn more about vacuum bags at <http://www.joewoodworker.com/veneering/faq.htm>

Choosing a Vacuum Press

There are three types of vacuum presses for veneer work. The information below is in reference to the types of systems offered at VeneerSupplies.com.

- Venturi System: A venturi model ([Project: V2](#)) cycles on and off using compressed air through an electro-mechanical valve and vacuum generator. This type of system is automatically controlled by a vacuum switching device which measures the pressure inside of the system and keeps that level of pressure reasonably constant.
- Cycling Electric Pump: Also available are pump driven models ([Project: EVS](#)) that cycle on and off but achieve vacuum via an electric vacuum pump. Again, this type of system is automatically controlled by a vacuum switching device which measures the pressure inside of the system and keeps that level of pressure reasonably constant.
- Continuous-Run Electric Pump: A continuously running vacuum system uses an electric pump but does not cycle on and off. Instead, it is allowed to run continuously. Most pumps are rated for continuous duty and can last a very long time even with very little air flowing through the pump chamber. These systems are commonly sold by retailers because they are least expensive and easiest to assemble. The [Project: CRS kit](#) sold at VeneerSupplies.com has a unique feature that allows the user to dial in the exact vacuum pressure needed with a bleeder valve.

Things to Consider

Portability

Though the electric pump version (EVS) is portable in the sense that electricity is easily obtainable, the system weighs a good 30 lbs. The 11 lb weight of the venturi system (V2) makes that system very portable but compressed air is not as easy to find outside of the workshop. The continuously running system (CRS) weighs about 18 lbs on average but this ultimately depends on the weight of the pump you choose.

Quality

All of the systems available described here are amazingly reliable pieces of equipment. I wouldn't offer anything less. Of course, anything mechanical is subject to occasional down-time. With that in mind, I think it's safe to assume that the system with the least amount of moving parts is the most durable. So I often recommend the V2 systems if you have a suitable air compressor.

Adjustability

The cycling vacuum systems can be adjusted to pull vacuum from 3" to 25.5" of Hg. For most veneer users, a setting between 18" and 21" is ideal. Setting the system to pull higher vacuum levels does not improve the bond of the veneer to the substrate. Instead, it only forces the vacuum to work harder. For electric pumps, the flow of air (referred to as "CFM" or cubic feet per minute) is much less at the high vacuum levels which can strain the pump unnecessarily.

A continuous-run pump will pull a level of vacuum consistent with its manufacturer rating. Most often, this is 25.5" of Hg. However, there are several factors that can reduce the pulling capacity of the pump.

- **Altitude**: Approximately 1" of Hg is lost for every 1,000 feet above sea level. If a pump is capable of pulling 25" of Hg at sea level, it will only pull 20" at 5000' above sea level.
- **Leaks**: Small leaks will usually not affect the maximum vacuum level. Multiple leaks can drop pressure readings by a more significant amount.
- **Bottlenecks**: Science has proven that restrictive air passages will not only limit the CFM but also have a small but noticeable effect on the maximum achievable vacuum level.

For vacuum press users who are using the system for non-veneer work (such as foam core molding), higher vacuum pressure can be destructive. An adjustable system is better choice for these users.

Performance

- Maximum Vacuum: Each of these systems can pull more than enough vacuum pressure for veneer work and assembling bent laminations. The maximum vacuum pressure is 25.5" of Hg for any of the systems offered at VeneerSupplies.com. This equals approximately 1800 lbs per square foot of pressure. See [this chart](#) for details.
- Initial CFM: The most common performance measure is the vacuum's flow rating at zero pressure. This rating coincides with the amount of time it takes to draw down an empty vacuum bag. Bags that have a large amount of air inside (such as those being used in curved veneer project) will benefit from the use of a higher rated CFM.
- CFM Curve: A venturi is capable of pulling vacuum faster than an electric pump at high pressure levels. In real life terms, this simply means that recharging cycles for 3 CFM venturi can be 1/4 to 1/3 shorter than a 3 CFM electric pump.

Project/Vacuum Bag Size

There are some basic principles that determine the CFM of the vacuum source needed for various projects. Keep in mind, these are estimates.

Project	Minimum Requirement	Minimum Requirement
4' x 4' or less vacuum bags	1 CFM for flat panels	3 CFM for curved panels
4' x 6' to 4' x 8' vacuum bags	3 CFM for flat panels	5 CFM for curved panels
4' x 9' to 6' x 15' vacuum bags	5 CFM for flat panels	9+ CFM for curved panels
Vacuum clamping	1 CFM for non-porous materials	3+ CFM for porous materials
Vacuum chucking on a lathe	1 CFM for very small projects	5 CFM for medium projects

Noise Factor

- Venturi based systems: These units operate at 68 dB during the run cycle. This is just marginally higher than conversational speech volume.
- Electric pump systems: This depends on the vacuum pump. The piston based pumps offered at VeneerSupplies.com operate at 74 dB. This is just lower than a noisy office, electric shaver or alarm clock.
- Continuous-run systems: The diaphragm based pump for most of these systems operates at 45 dB which is considered to be enough to wake the average sleeping person.

Annoyance Factor

Keep in mind that the acceptable decibel level can be severely impacted by pitch. A shrieking fire alarm may not produce the decibel level of a monster truck but it can be much more annoying. Electric vacuum pumps have a lower pitch making their noise levels somewhat more reasonable.